



Physical Fitness & Injury Prevention

PLAN OF THE DAY NOTES

Promote physical fitness and injury prevention healthy behaviors! The following physical fitness and injury prevention tips can be placed daily in your Plan of the Day or several in your Plan of the Week. A heading such as TODAY'S FIT TIP (s) is recommended.

Table of Contents

General Physical Fitness Topics.....	page 02
Cardiovascular (Aerobic) Fitness	page 11
Muscular Strength and Endurance	page 15
Flexibility / Stretching Exercise	page 22
Injury Prevention	page 25
Attachment (1) Recommended Stretches.....	page 30
Attachment (2) Contraindicated / Ineffective Stretches	page 31

General Physical Fitness Topics

Physical Fitness Overview (1)

Fitness is much more than the absence of disease. It is a state of being that includes strong, flexible muscles and an efficient system for getting oxygen and nutrients to the body.

Physical Fitness Overview (2)

Physical fitness is a state of being that must be maintained. You have to specifically exercise the muscles and joints where you want improvement. It is both a science and an art, requiring effort and balance. It is also achievable by everyone, despite body type, family health habits, and past habits.

How Ready Are You to Begin an Exercise Program? (1)

How often do you exercise... three times a week?.....less than three times a week? Your response indicates your level of readiness to exercise. Some of you are in the Action stage. That is, you are already consistent in your efforts to exercise. And some of you are more active than others.

Some of you are in the Contemplation Stage: you don't exercise now, but you are seriously thinking about it and are gathering more information about it. And some of you are in the Precontemplation Stage: you are not even thinking about starting to exercise. That doesn't mean that you some day won't move into the Contemplation Stage. Most people do.

How Ready Are You to Begin an Exercise Program? (2)

Everyone is at his or her own level of readiness to exercise. You should realize that behavior change is a process, and what you do and how well you do it is determined by how ready you are to make a change. If you are at a stage where you want more information, contact your PRT coordinator, MWR / SEMPER FIT fitness specialist, or other fitness professional on your base or your ship, or in your community.

How Ready Are You to Begin an Exercise Program? (3)

If you are ready to start exercising, then do it. Don't wait until next week, or even tomorrow. Get moving. If you are already active, understand what it is that motivates you to be active, and reinforce those feelings.

How Ready Are You to Begin an Exercise Program? (4)

You may or may not be ready to make all the changes it takes to achieve maximum fitness, but you're probably ready to do **something**. Each day, do what you can – exercise around the block or add physical activity into your daily schedule.

Benefits of Exercise (1)

When asked why they exercise, Sailors in focus groups world wide repeatedly said it decreases their stress; increases their energy level; helps them feel better, look better, and sleep better; reduces their body fat; and improves how they feel about themselves.

Benefits of Exercise (2)

One area of common ground for researchers is that physical activity is absolutely essential for good health. It improves the way you feel, look, think, sleep, and perform, as well as reduces your chances for premature death.

Benefits of Exercise (3)

Do you ignore your body five or six days a week, only to demand its peak performance for sudden activity, like working hard in the yard or jumping in a softball or touch football game? If you do, you are just asking for an injury. Pulled hamstring, twisted ankle, sore back. It can come in any form and at any age. Participating in a complete exercise program, including aerobic activities, muscular fitness, and flexibility exercises will improve your quality of life and will decrease your chances of getting injured.

Benefits of Exercise (4)

Too many people treat their bodies like they treat their cars. Leave it in the garage until it's needed, then crank it up and hit the road running. But run your car too hard and you can expect trouble – blown gasket, popped fan belt, or, even worse, a cracked block. Your car needs maintenance. It needs regular attention.

Your body is the same. If you park it in the recliner all week long and jump into the weekend with both feet, expect problems. They're going to happen. Leave it parked in the recliner too long and the equivalent of rusting away is going to happen.

So what can you do? Research clearly shows that regular physical activity is essential to feeling good and being healthy.

Combating Common Exercise Excuses: Identifying Excuses for Not Participating in an Exercise Program

So, why do some people choose to not exercise? You hear it all the time, and you've probably even said it yourself, "I don't have time; I'm too tired; it's too boring; I don't have a place or the equipment to exercise;" or "My job is active enough."

If it's important enough to you, like some other things in your life, you'll develop strategies to overcome your barriers. Try getting up a few minutes earlier, working out at lunch, or committing a few minutes before dinner. Start off in small increments. You'll have to break some old habits, but after a few weeks you'll have a new set of healthy habits.

Combating Common Exercise Excuses: Feeling Tired

If you feel tired, try doing something at a low level of intensity, like exercising for a shorter frequency, intensity, or duration. Our bodies often feel fatigued, but it's our minds making us feel that way. Exercise can kick you into a new, higher level of energy in just a few minutes. Many Sailors reported in focus groups about exercise that a workout, even at the end of a 12-hour workday, decreases their stress and increases their energy levels.

Combating Common Exercise Excuses: Getting Bored

If you get bored exercising, you're doing the wrong exercise! Find something you enjoy doing. Crank up the music. Work out with a friend. Exercise should be fun! Experiment. Be creative.

Combating Common Exercise Excuses: Where to Exercise

You do not have to be a member of a fitness center to work out. For some activities, it more convenient, but there are many things you can do at home, on a ship, or while traveling, such as jogging in place, jump roping, pushups, abdominal crunches, and flexibility exercises. Doing something is better than doing nothing.

Combating Common Exercise Excuses: “My Job Keeps Me Active Enough”

Your job may keep you active, and you are probably getting some benefits from it if it keeps you active enough. Most jobs, however, require the use of specific muscle groups and do not provide the variety needed to develop all your major muscle groups. That’s why we need to do some structured exercise in addition to our job tasks.

Setting Realistic and Attainable Exercise Goals: Setting Yourself Up for Success

As you begin or advance an exercise program, prepare yourself for success. Set some goals for yourself, and be realistic. Understand that your body will respond to your workouts, but at its own pace. The more you are willing to work at it, the more progress you will see. Just be careful not to overdo it.

Setting Realistic and Attainable Exercise Goals: Setting Yourself Up for Success

As you begin an exercise program, prepare yourself for success. Set some goals for yourself, and be realistic. Understand that you probably aren’t the athlete now that you were in high school or college, or that the weight you’ve put on over the past 15 years is not going away overnight. Be patient and persistent.

Setting Realistic and Attainable Physical Activity Goals

Your personal goals should be realistic and attainable. Short term goals should focus on doing some activity on a frequent basis. Long term goals can include improved performance and other physical changes.

Setting Realistic and Attainable Exercise Goals: Body Typing

When you are setting personal exercise goals, be aware that everyone does not have the same body type. Some people are naturally thin. Others are naturally big. And most people fall somewhere between the extremes. You can't change your basic body structure, but you can change the amount of fat you have to carry around and how strong and fit you are.

Setting Realistic and Attainable Exercise Goals: Do Benefits Outweigh Sacrifices?

When setting personal exercise goals, list the benefits you expect from training. Maybe you want to have more energy, fit in your uniform better, feel better about your self, lose weight, improve health, or be able to perform better. Write down what is important to you, and what you really expect to gain from working out.

Next list what sacrifices you are willing to make: time, boredom, and discomfort and fatigue while exercising. Then decide if the benefits are worth the sacrifices. Look at what you can do to maximize the benefits while minimizing the sacrifices. But don't fool yourself. Anything worth doing has its sacrifices. Face that up front. Understand it. Now you are ready to make a commitment.

Setting Short Term Exercise Goals

Set short term goals that encourage commitment. "I will go to the gym and work out at least three days a week for a month." Or, "I will do 40 abdominal crunches and 40 pushups four days a week for six weeks.

Setting Exercise Goals for Body Fat Loss (1)

If your long term goal is to lose weight, realize that you may not see any weight loss in the first month. As your body is burning up fat, it is developing muscle. The good news is that muscle is much more dense than fat, meaning that you'll probably see a loss in inches before you see a loss in weight.

Setting Exercise Goals for Body Fat Loss (2)

Weight loss should be a long term goal, despite promises by some companies to help you lose a lot of weight in a short period of time. If you are able to lose weight quickly, it's more likely to come back.

You should not lose more than 2 lbs. Per week.

Setting Exercise Goals for Body Fat Loss (3)

More good news is that as you develop more muscle mass, your resting metabolic rate will increase. That is the rate at which your body burns up calories when you are at rest. Muscle is active tissue, unlike fat, and burns calories. Therefore, the more muscle mass you have, the more calories you will burn, even while you're sleeping!

Setting Exercise Goals for Body Fat Loss (4)

Weight loss should be a long term goal. Ignore promises by some companies to help you lose a lot of weight in a short period of time. If you are able to lose weight quickly, it's more likely that it will quickly return.

Setting Exercise Goals for Improved Performance

If your exercise goal is to improve performance, train specifically for that performance. If, for example, you want to improve your one-and-a-half-mile time in two months, train appropriately. Work toward your goal methodically.

Do Something!

We should realize that doing something is better than doing nothing. We should explore reasons and ways to be active, and work to overcome the barriers that try to get in our way. We should never let what we cannot do interfere with what we can do. The choices are ours!

Be Prepared for Exercise Setbacks

The key to goal setting in exercise is to be realistic. Understand that there may be short term setbacks. You may not be able to get to the gym for a while. But don't let what you cannot do keep you from doing what you can do. Do pushups, abdominal crunches, pull-ups, or dips, and jump rope, climb stairs, jog, stretch, or whatever you can do. Maintain until you can get back to your program.

Building new habits, even positive ones, takes some work, so don't get discouraged by temporary setbacks.

Components of a Complete Exercise Program:

There are three primary components of a complete fitness program; a complete fitness program includes aerobic activity, strength training, and stretching. Include all three, even though you may choose to emphasize one area.

Special Exercise Considerations

Before beginning an exercise program, you have to consider your current health status and factors that may create special needs related to exercise. Risk factors such as tobacco use, age, and medications should be addressed with your primary care provider prior to beginning an exercise program.. People who are pregnant, obese, or have high blood pressure have special needs related to exercise. Your primary care provider can help you weigh the impact of those issues, and design a program that works well for you.

EXERCISE MYTH: “If I am Thin, I Don’t Need to Exercise”

Some people think that because they are thin they don’t need to exercise. Wrong. Exercise is good for everyone, and its purpose is more than just achieving a slender body. An extensive study by the Cooper Institute for Aerobics Research in Dallas, Texas revealed that adults who were overweight but physically fit were healthier and lived longer than thinner people who were unfit.

EXERCISE MYTH: “No Pain, No Gain”

Wrong! The U.S. Surgeon General’s Report on Physical Activity reported that significant health benefits can be experienced by including even a moderate amount of physical activity. Some individuals who exercise past pain, run the risk of injuring themselves.

Physical Fitness: A Commitment to Readiness

Physical fitness is an essential and critical component of readiness.

You have made a commitment to readiness. Just as a mechanic keeps an F-18 ready for combat, it is important to keep your body prepared to respond. Physical fitness is a commitment to yourself, your families, your service, and your country. It is a responsibility you can not ignore.

Exercise Motivation Tip: Work Out With a Partner

Physical fitness can be achieved working by yourself, with your family, or with your friends. Many people find working out with a partner to be motivating. Find someone who is at about the same fitness level as you, and jointly make a commitment.

Cardiovascular (Aerobic) Training for Physical Fitness

What is Aerobic Exercise:

Cardiovascular activities, such as running and swimming, help the heart, lungs and blood vessels become more effective at delivering to the muscles what they need to function – oxygen and glucose.

Aerobic activity involves large muscle groups, such as your legs, hips and shoulders, at an intensity that can be sustained for a long period of time. The body is able to provide enough oxygen and energy for the muscles to continue functioning effectively. Aerobic exercise is essential for the development of a healthy heart and cardiovascular system.

Benefits of Aerobic Activity

Aerobic activity, which uses large muscle groups for extended periods of time, is essential for good heart health, weight management, and overall fitness improvement.

Types of Aerobic Exercise:

Aerobic activities are those that use large muscle groups, such as your legs, hips and shoulders, at an intensity that can be sustained for a long period of time. Examples include brisk walking, running, swimming, cycling, roller blading, cycling, swimming, hiking, stair climbing, rowing, aerobic dancing, and cross country skiing.

How Much Aerobic Activity is Enough?

To answer that question, you have to consider answers to five questions:

- How frequently are you exercising?
- How intense is your workout?
- How long does your exercise session last?
- What type of exercise are you doing?
- How are your workouts progressing over time?

To make exercise simpler, let's boil things down to the FITT Principle: F for frequency, I for intensity, and T for time and type of exercise.

Frequency Guidelines for Aerobic Exercise

For frequency, set as a goal to exercise at a vigorous level at least three days a week or at a moderate level almost every day. With aerobic activity, it's ok to exercise daily, as long as your workouts are not too intense. A routine alternating days of aerobic activity with days of strength training, and including stretching every day, can provide an ideal total fitness program.

Intensity Guidelines for Aerobic Exercise

Intensity can be measured by how hard your heart is working. As a rule of thumb, it has been suggested that you should be able to talk but not sing during an aerobic activity. For safety and effectiveness of your personal exercise program, it is important to know your target (exercise) heart rate.

How to Find Your Target (Exercise) Heart Rate

Knowing your target heart rate (THR), also known as exercise heart rate, is one of the most important elements of your personal exercise program. Depending on your exercise objectives, your target heart rate will assist you in exercising safely and most effectively. Your THR range can assist you in decreasing body fat most effectively and maintaining fitness levels (exercising at 60 – 65% THR for a longer duration) or can assist you in running faster or longer most effectively (exercising at 75 – 90% THR). Most of you have probably checked your heart rate by checking your pulse at your wrist or at the carotid artery in the front of your neck. During exercise your pulse becomes easier to find because the heart is beating harder. Immediately after the most intense time of your activity, find your pulse by gently, but firmly press on your lower arm near the base of the thumb or on one side of your neck. Don't press too hard or you may get an inaccurate count by interfering with the rhythm. Count the number of beats in 10 seconds, then multiply that number times six to determine how many beats per minute your heart is beating.

Here is a formula to determine your target heart rate zone, which is where you want your heart rate to be during exercise. To begin, subtract your age from 220. For example, if you are 30 years old, your working number will be 190. Now multiply that number times 60 percent to get the lower range of your THR zone. In this case, the lower range is 114. To get the upper range, multiply your working number times 90 percent. For a 30-year old would want his or her heart rate between 114 and 171 beats per minute while exercising. If you are trying to maintain fitness or lose fat, you will want to work at a lower intensity for a longer period of time. If you are trying to improve fitness or performance, you will want to work out at a higher intensity. The 30 year old in this example would want a 10-second count between 19 and 29. A little trick to help make counting easier is to count zero-zero-zero until the second hand or digital count on your watch reaches a starting number, such as five, 10, 15, etc. Then begin counting your heart beats for 10 seconds.

How Much Time Should You Exercise?

Exercise time involves how long you should exercise at your target heart rate. That does not include your warm up or cool down time. The American College of Sports Medicine recommends 20 to 60 minutes of continuous aerobic activity. If you haven't exercised in a while, multiple sessions of short duration may be necessary. As you become conditioned, you can increase the length of time of your workout.

The F.I.T.T. Principle of Aerobic Exercise

The effectiveness of exercise is based on the FITT Principle. The **F**requency of your workouts should be three to five times a week. The **I**ntensity should be within your Target Heart Rate Zone. And the **T**ime should be 20 to 60 minutes, although if just beginning an exercise program, you should start at 12 to 20 minutes. The **T**ype of exercise you choose should help you reach your Target Heart Rate Zone and be enjoyable.

The U.S. Surgeon General's Report on Physical Activity

A landmark report issued by the U.S. Surgeon General's Office in 1996 reported that significant health benefits can be obtained by including even a moderate amount of physical activity on most, if not all, days of the week. The report defined moderate as 30 minutes of brisk walking or raking leaves, 15 minutes of running, or 45 minutes of playing volleyball. Build activity into your life by taking the stairs rather than the elevator, park your car at the end of the parking lot and walk a little more, and sweep rather than blow the leaves from your driveway.

Stages of Progression and Physical Activity

You should expect to make progress from one stage of activity to another, beginning with an initial stage of four to six weeks, moving to an improvement stage that may last up to six months, then into a maintenance stage in which you maintain the level of fitness you have earned.

Overweight v/s Overfat

There is a difference between being overweight and overfat. Some people, such as well-conditioned athletes, may be overweight according to height and weight charts, but their body fat may be fine. That's because they have developed their muscles, which are twice as dense and twice as heavy as fat. Other people may be fine according to the charts, but could actually be overfat because they have underdeveloped muscles.

Health Risks of Being Overfat

People who are severely overfat, or obese, are at greater risk for hypertension, diabetes, and cardiovascular disease. They also have lower physical working capacity and have to deal with the social pressures of obesity. People who are severely overfat need to alter their eating and activity patterns with the help of a physician, dietitian, or other trained health professional.

Aerobic Activity and Decreasing Body Fat

The key to effective weight management is building more activity in your life and developing healthier eating habits. Both strength training and aerobic exercise can help with weight control, but aerobic activity is more efficient because it involves a sustained high rate of energy expenditure. If one of your goals of exercise is to lose fat, longer periods of lower intensity activity is more beneficial.

Decreasing Body Fat Most Effectively

If you are like millions of Americans who need to lose a few pounds of fat and tone up, aerobic activity is essential. Some people try dieting alone, only to find themselves frequently going on and off their diet. Dieting alone can cause several problems. The body can learn to work more efficiently with fewer calories. Calories are a measurement of potential energy in the food you eat. Calories not used by the body are stored as fat. One pound of fat is equivalent to about 3,500 stored calories. Physical activity increases the number of calories that your body burns up and helps develop more muscle mass, which will burn even more calories when you're not exercising. Another problem with diets is that many do not encourage permanent changes in eating behavior. When you go off your diet and start eating the way you once did, the weight comes back. If you decide to try to lose weight again by dieting, you've begun the yo-yo syndrome. Every time you try to lose weight again it gets more difficult because your body has become more efficient at functioning on fewer calories.

The key to effective weight management is building more activity in your life and developing healthier eating habits. Both strength training and aerobic exercise can help with weight control, but aerobic activity is more efficient because it involves a sustained high rate of energy expenditure. If one of your goals of exercise is to lose fat, longer periods of lower intensity activity is more beneficial.

Strength Training for Physical Fitness

Benefits of Strength Training (1)

Muscular strength and endurance exercises are important for many reasons, including improved ability to perform everyday tasks, prevention of low back pain and muscle injuries, enhanced personal appearance, maintenance of good posture, increased body mass, and for some people, improved sports performance.

Benefits of Strength Training (2)

Strength training is important for enhanced performance, injury prevention, and weight management.

What is Muscular Exercise (anaerobic exercise)?

Anaerobic work, which literally means “without oxygen”, is an activity that can be continued for only a short period of time. The heart and circulatory system is not able to supply enough energy and oxygen to maintain the activity for more than a couple of minutes or less. Sprinting, weight training, situps and pushups are examples of anaerobic work.

What is Muscular Strength and Endurance?

Muscular strength and endurance activities help your muscles become stronger, giving them both the raw strength and ability to work repeatedly without undue fatigue.

Muscular strength refers to the amount of force a muscle or muscle group can exert against a resistance in one maximum contraction, through a full range of motion. Muscular endurance, which is related to strength, is the ability of a muscle or muscle group to apply force repeatedly or to sustain a contraction for a period of time without undue fatigue. Exercise, including strength training, is good for everyone. We need to aim for both muscular strength and muscular endurance. Both are important.

Strength Training Techniques:

People use many different techniques to develop muscular fitness, including free weights, weight machines, and their own body weight with activities like abdominal crunches, pushups and pullups. Regardless of the techniques you choose, improvement will only result after overloading the muscle in a progressive manner.

The Key Principle of Overloading During a Muscular Fitness Program

One of the key principles of muscular fitness is overloading. Muscles will become stronger and have more endurance only when they are worked at a higher intensity than they are accustomed to. Overload can be achieved by any combination of the following:

- * Increase in the amount of weight lifted
- * Increase the repetitions in a set
- * Increase the number of sets; and
- * Decrease the rest time between sets

Definition of a Repetition and a Set:

The terms repetitions and sets are two terms that are used often in strength training.

A repetition is the completion of a movement through a full range of motion. For example, one pushup would be one repetition; two pushups would be two repetitions. The term repetition is usually shortened to the word “rep”. So 10 reps would mean 10 pushups, or 10 bench press lifts, or 10 of whatever exercise you are doing.

Set refers to the number of repetitions attempted without rest. The 10 pushups in this example would equal one set. If you rested a little and did 10 more, you would have done 2 sets of 10 reps.

Muscular Fitness Exercise Intensity Guidelines

Repetitions and sets can be adjusted to change the intensity of a workout. Intensity relates to the extent that muscles are overloaded. If your goal is to increase muscle strength, and to some degree muscle size, you will want to lift heavy weights with a low number of repetitions. If you want to increase endurance, use lighter weights and a greater number of repetitions. To get the best all around improvement in muscular fitness, most experts recommend eight to 12 repetitions per exercise. The recommended minimum is one set of eight to 12 reps, doing eight to 10 exercises that condition major muscle groups.

Exercise Duration for Strength Fitness:

Have you considered the duration of your muscular fitness training sessions? This will vary depending on your level of muscular fitness and what you are trying to achieve. For most people, a well –organized workout can be achieved in under 30 minutes, plus time for warming up, cooling, down, and stretching. Some studies suggest that programs lasting longer than an hour per session are associated with higher drop out and injury rates.

Exercise Frequency for Strength Fitness: Allow Your Muscles Time to Rest

According to American College of Sports Medicine exercise guidelines, plan your strength training workouts for at least two non-consecutive days per week. More frequent training can produce larger strength gains, but the additional improvement is relatively small. Always allow at least one day of rest between strength training the same muscle group. It is during this rest time that your muscles actually rebuild themselves and grow stronger. If you wish to workout on consecutive days, plan to work different muscle groups each day, for example upper body muscle groups one day and lower body muscles the next; or chest, shoulders and triceps one day and your back, biceps and legs the next.

Balance and Symmetry During Strength Fitness Programs

The exercises you choose will depend on the muscle groups you wish to develop. Be careful to include the muscles that oppose the ones you have targeted. Muscles are usually grouped in sets that oppose one another. To maintain balance and symmetry, when muscles on one side of the joint are trained, then the muscle group that opposes it should also be exercised. Some examples of opposing muscle groups that can create imbalance problems if both groups are not equally exercised include:

- a: Quadriceps in the front of the thigh, and the Hamstrings in the back of the Thigh
- b: Biceps in the front of the upper arm, and the Triceps in the back of the upper arm
- c: Pectorals in the chest, and the Rhomboids in the upper back
- d: Abdominal muscles and lower back muscles

PART 1: Strength Fitness Exercise Guidelines from the American College of Sports Medicine

A well-balanced workout addressing the major muscle groups can be achieved with eight to 10 exercises. If you are not experienced with strength training, talk with a personal trainer or someone you trust who knows how to set up an effective program. Here are some guidelines established by the American College of Sports Medicine:

- Perform a minimum of eight to 10 separate exercises that train the major muscle groups.

- Plan your workouts to develop total body strength in a relatively time efficient manner, preferably under an hour.
- Perform one set of eight to 12 reps of each exercise.
- Perform these exercises at least 2 non-consecutive days a week.

PART 2: Strength Fitness Exercise Guidelines from the American College of Sports Medicine

A well-balanced workout addressing the major muscle groups can be achieved with eight to 10 exercises. If you are not experienced with strength training, talk with a personal trainer or someone you trust who knows how to set up an effective program. Here are some guidelines established by the American College of Sports Medicine:

- Adhere as closely as possible to the specific techniques for performing a given exercise.
- Perform every exercise through a full range of motion.
- Perform both lifting and lowering portion of the resistance exercises in a controlled manner. Avoid the temptation to use momentum to lift. Doing so does not allow you to isolate muscle groups, and increases your likelihood of being injured.
- Maintain a normal breathing pattern. Holding your breath can cause your blood pressure to increase excessively.
- If possible, exercise with a training partner who can provide feedback, assistance, and motivation. Your partner can also serve as your spotter if working on heavy free weights.

Strength Training Guidelines (Summary Comment)

An effective program will work all major muscle groups at least two times a week, with at least a day of rest between each workout. An effective program will also maintain balance, working on muscle groups that oppose one another, and include a warm-up and cool down period.

STRENGTH TRAINING SERIES (2 WEEK POD SERIES): Effective Strength Training Techniques

Introduction: Some of you may have worked out on weights when you were in high school or college. That background may be very helpful. Unfortunately, many people learned practices and techniques that they need to unlearn for safety and effectiveness. Let's spend a few moments now looking at what a weight workout should be. Remember, some of these current thoughts may not be exactly what you learned while pumping iron.

Strength Training Technique #1:

Each session should begin with a 5 to 10 minute warm-up that includes stretching each muscle group to be exercised.

Strength Training Technique #2:

You may have learned to breathe out while lifting and breath in while returning to the starting position. This is a safe practice; however, it is best to maintain a normal breathing pattern. The main thing to remember is not to hold your breath.

Strength Training Technique #3:

Make sure that each exercise is performed correctly through the full range of motion. Do not lock your joints on extension. It's best to come to a smooth, natural endpoint to reduce chances of injury. If you aren't able to complete the lift motion, use a lighter weight.

Strength Training Technique #4:

When lifting, maintain a natural arch in your back. Additional arching puts unnecessary strain on your back, plus it focuses the lift away from the muscle groups you are really wanting to work on.

Strength Training Technique #5:

If you are using heavy free weights, work out with a partner. You can serve as a spotter for each other, and make sure that the person lifting doesn't get trapped under the weights. It is also motivational to have a partner who will encourage you during the workout.

Strength Training Technique #6:

If using free weights, make sure the collars that hold the weight plates in place are tight so the plates won't accidentally fall off the bar.

Strength Training Technique #7:

Perform each lift slowly and steadily. Be in control at all times, especially during the lowering phase. The National Athletic Trainers' Association recommends that your lifting motion take about two seconds, and your lowering motion take about twice as long.

Strength Training Technique #8:

Onboard ship, be alert for rolling motions that may throw your balance and coordination off, especially when you start to fatigue.

Strength Training Technique #9:

The sequence of your exercises is very important. Work out the largest muscle groups first, and avoid working out the same muscle groups back -to-back. For example, when working your upper body, begin with the large muscles, such as the chest and back. Then move to the extremities. For example, if you worked the wrists first, they may be too fatigued to allow you to grip and control weights safely when working larger muscle groups.

Strength Training Technique #10:

Exercise all muscle groups to ensure balanced development.

Avoiding Excessive Soreness After Strength Fitness Exercises:

If you haven't worked out for a while, you may feel some soreness a day or two after your first workout. Gentle stretching should give you some relief. This soreness, if not excessive, is natural and will get better in a few days. Don't stop exercising, but if you are overworking, back off a little. If soreness is experienced, stretching and light lifting can help reduce the discomfort. Some soreness can be expected when beginning a program, or when significantly increasing intensity. Some steps that might help you avoid too much soreness include:

- Warm up properly.
- Start your exercise program at a low level of intensity. That may mean putting your ego on the shelf when you walk in the gym.
- Increase your workload gradually throughout the program. Be patient with your progress. Just be consistent and gains will come.
- Take time to cool down, including stretching, after each exercise session.

Women and Weights:

Women should not be afraid of strength training. Only under rare circumstances do women develop much bulk when strength training. For most women, the result of strength training is muscle toning. That means the muscle is firmer and shows better definition at rest. A woman in weight training may see remarkable gains in strength initially, but she shouldn't expect her muscles to achieve the bulk that is common in males. A strength training program is an important component to all women's physical fitness programs.

Training Specifically for Improved Performance:

If your goal is to improve performance, train specifically for that performance. If, for example, you want to hit a baseball or softball harder, focus primarily on the muscles in the shoulders, arms, back, chest and neck. If you want to be able to jump higher, work more on the legs and hips. Whichever muscle groups you decide to focus on, don't neglect the others. Total body improvement is necessary to peak performance.

Muscular Exercise Motivation Tips (1)

Find a workout partner. This is one of the best motivational techniques. Schedule your times together, and encourage each other. Find someone who is about your same level of strength, so you won't have to change the plates on the free weights as often.

Muscular Exercise Motivation Tips (2)

Listen to music. Some people like rock, some hip hop, some country, some classical. Find something you like. If you are lifting in a gym with others, remember that everyone's taste in music is not the same. Small radios, tape players or CD players with earphones are good weight room etiquette moves. Just don't ignore your lifting partner.

Flexibility / Stretching

What is Flexibility?

Flexibility or stretching exercises are necessary to prevent injury to the muscles and joints, and to allow the muscles to work efficiently through a full range of motion.

Stretching is important for everyone, from the Olympic athlete to the most committed couch potato. Stretching makes the muscles, ligaments and tendons more flexible and elastic-like. Rather than tearing or breaking when under strain, a flexible muscle is more likely to stretch and give.

Flexibility is one of the three primary components of a physical exercise program. Flexibility is the maximum ability to move a joint through a maximum range of motion, and plays an important role in preventing injury to muscles, ligaments and tendons. Flexibility is also important in performance, allowing muscular work to be more effective and efficient. Stretching is something that everyone should do every day.

Benefits of Flexibility

Flexibility is important in injury prevention. Being flexible also enhances physical performance by allowing the muscles and joints to perform more efficiently and through a full range of motion. With limited flexibility, you may feel tightness or stiffness at your joints, and have difficulty doing even simple tasks, like pulling on a t-shirt or tying your shoelaces. Work tasks that require a lot of bending and lifting, like aircraft maintenance, can really cause problems if you don't stretch regularly and properly. Lack of flexibility can lead to chronic lower back pain, one of the leading causes of lost work time in America.

Flexibility is important for maximizing performance and preventing injuries.

Why Should You Stretch?

Ask someone with back pain, or the athlete who can't workout because of a strained muscle. It's difficult to appreciate how important flexibility is until you have an injury. Lack of flexibility is also a factor in less obvious situations. The sprinter with tight hamstring muscles will lose some speed because those muscles restrict the ability to flex the hip joint, which shortens stride length. A shorter stride means less speed.

Flexibility For Back Injury Prevention

Back injuries, which are usually the result of poor flexibility and weak muscles, affects most Sailors and Marines at some time during their military career. And if you've ever had back problems you know how painful it can be!

The Importance of Flexibility in Performing Everyday Tasks

Good flexibility not only prevents injury, it helps you perform everyday tasks with greater ease. Picking up a box of supplies, squirming out of the back seat of a two-door car, or cranking an uncooperative lawn mower require some degree of flexibility.

General Flexibility Guidelines

A good stretching program is well planned and involves the muscle groups that most need to be stretched in a way that helps develop elasticity.

- To be flexible, you need to stretch at least three to five times a week, using a routine that is designed to address all major joints and muscle groups. Daily stretching is even better.
- Do each stretch for 10 to 30 seconds to a position of mild discomfort. However, it should not hurt, and do not bounce. Then, repeat each stretch three to five times.
- Stretching exercises can be done during your warm-up and cool down periods before and after your aerobic activity. Always warm the muscles up some before stretching (jogging in place, rowing, etc.); never stretch a cold muscle.

A good stretching program includes joint-specific, static stretches, done daily at least three times a week.

When Should You Stretch?

The best times to stretch are after a light warm-up and at the end of a workout, during the cool down period. A good routine to warm the muscles up is

- Brisk walking or jogging for two or three minutes – do not do jumping jacks, sprinting or rope jumping during this phase.
- Once your body begins to perspire, then stretch, giving special attention to those muscle groups that you are going to use in the rest of your workout or your sport.
- Next do your aerobic and/or strength workout, such as jogging, swimming, cycling, or weight lifting, or participate in the sport activity you enjoy, such as basketball, tennis, or volleyball.

- At the end of your workout, cool down to let the heart rate lower to normal levels; then stretch again, focusing on specific muscle groups that you worked on during the activity phase of your workout.

How Do You Know Which Stretches to Do?

Flexibility, like muscular strength, is specific. Choose your stretches to target the muscle groups that need attention. Muscles that are tight and tense most need to be stretched.

Attachment (1) lists 10 stretches that are located in the Navy Fitness Planner Booklet and in the Navy Fitness Training Kits. If there is no attachment to this message, refer to these resources for a complete flexibility exercise program.

- Neck Stretch
- Triceps Stretch
- Upper Back Stretch
- Chest and Biceps Stretch
- Butterfly Stretch (groin stretch)
- Calf Stretch
- Hamstring Stretch
- Lower Back Stretch
- Quadriceps Stretch
- Back Extension Stretch

How Do You Know What Stretches Not to Do (Contraindicated Stretches)

Attachment (2) provides an outline of bad or contraindicated stretches. They either don't do a good job stretching the muscles, or they have potential to do harm. If you are currently doing them, please consider replacing them with the good stretches presented in Attachment (1)

- Hurdler Stretch
- Quadriceps Stretch with Both Knees Flexed
- Seated Hamstring Stretch with Both Legs Extended
- Standing Hamstring Stretch
- Yoga Plow
- Full Head Circles
- Windmills
- Donkey Kicks
- Deep Knee Bends
- Deep Knee Lunges

Injury Prevention

Quick Tips for Injury Prevention: Always Warm Up Before Exercising

Always warm up before exercising. Begin slowly by walking, jogging, or doing some other light aerobic activity to slowly increase your heart rate, warm up your muscles, and lubricate your joints.

Quick Tips for Injury Prevention: Always Cool Down After Exercising

Always cool down after exercising. Walk, jog, or do another light activity to allow your heart rate to gradually slow down.

Quick Tips for Injury Prevention: Don't Do Too Much Too Soon

Begin exercising at a low intensity and progress well within your limits. Don't try to do too much too soon.

Preventing Overuse Injuries

Change your daily workouts to avoid overuse injuries. You may want to run some days, and cycle or swim on others. This is often referred to as "cross training".

Give your body time to rest and heal. Overdoing it can lead to a variety of overuse injuries, including stress fractures and tendonitis.

Prevention Injuries: Obesity and Exercise

If you are obese, you may need to work at a lower intensity. The extra strain on your muscles and joints can cause injury. Exercises that are non-weight bearing, like swimming and cycling, may be necessary, and frequent modifications in frequency and duration may be required.

Quick Tips for Back Injury Prevention

Use proper lifting techniques, being careful to protect the muscles in your back, especially when lifting heavy objects. Keep your back upright and lift with your legs, not with your back.

When possible, push rather than pull. Use aids, such as dollies and carts, for moving heavy or awkward objects.

Ergogenic Substances (1):

Some athletes try to gain an advantage by using drugs, dietary supplements, and other substances, also called ergogenic aids, to enhance performance and accelerate muscle growth. Most do not work at all, and many have significant risk. Every substance with potential benefit carries some dangers. Eating a well-balanced diet can provide you with all the nutrients you need.

Ergogenic Substances (2):

So what about the use of drugs and dietary supplements, often referred to as ergogenic substances, by both men and women? Some athletes try to gain an advantage by using these substances to enhance performance and accelerate muscle growth.

The distinction between a drug and a dietary supplement may not be obvious, but it is important. Drugs must meet Food and Drug Administration approval for safety and effectiveness. If the substance is not classified as a drug nor promoted as having therapeutic or healing value, the FDA generally does not regulate its sale. That means anyone can produce a new dietary supplement without any special approval and without being investigated for safety and effectiveness, unless a health risk is brought to the FDA's attention. Athletes who use dietary supplements often serve as guinea pigs for substances that have not been tested.

Ergogenic Substances (3):

The bottom line is that extreme dietary supplements do not work at all, and that no ergogenic aids are worth the risk to your reputation and health. Every substance with a potential ergogenic benefit carries some disadvantages and dangers. Eating a well-balanced diet can provide you with all the nutrients you need, even for a very vigorous training program.

Dangers of Amino Acid and Protein Supplements:

One myth is that consuming amino acids and protein supplements will improve performance. However, muscle growth cannot be increased by consuming excess protein. Only exercise can increase muscle mass. Intake of protein that exceeds the athlete's caloric requirement will only be stored as fat. High intake of protein can lead to ketosis, dehydration, gouty arthritis, and loss of calcium. A Sailor or Marine who takes even a single amino acid supplement daily may actually be causing problems with the absorption of other essential amino acids. Every substance with a potential ergogenic benefit carries some disadvantages and dangers. Eating a well-balanced diet can provide you with all the nutrients you need, even for a very vigorous training program.

Flexibility For Back Injury Prevention

Back injuries, which are usually the result of poor flexibility and weak muscles, affects most Sailors and Marines at some time during their military career. And if you've ever had back problems you know how painful it can be!

Choosing the Best Sports Shoe

Wear shoes that are appropriate for your activity. For example, there are important differences between shoes designed for running and those designed for basketball. Buying a good pair of shoes is a good investment.

If the activity or activities you choose involve impact with the ground, such as walking, running, basketball, or aerobic dance, get shoes to match what you are doing. Activities that involve side-to-side-movement, like basketball and racquetball, require shoes that give your ankles good support. Cushioning and support are important in shoes for walking and running.

Buy your shoes from someone who is familiar with your choice of sports or activities and can properly match your shoes to your needs.

Clothing and Exercise

Wear clothing that is appropriate for the environment in which you are exercising. In warm weather, wear gear that allows your skin to "breathe" and your perspiration to evaporate, which is necessary for cooling. Cotton is a good breathable fabric.

Avoid plastics and vinyls, especially the so-called sauna suits, which are dangerous.

In cool or cold weather be sure that you protect your hands and head, as well as other skin surfaces. If you are exercising in an area where it is convenient, you can dress in layers and remove outer clothing as your body warms up.

Wear clothing that is appropriate for the environment, and be careful in weather extremes, especially hot weather. In cold weather, dress in layers. Always wear clothing that allows your body to breathe.

Proper Hydration and Exercise

In all weather, and especially in warm weather, be sure that your body is adequately hydrated. Drink as much water as is physically comfortable 15 to 20 minutes before exercise. During prolonged activity, drink again even before you get thirsty. At least a cupful of water every 15 minutes is recommended. After exercise, drink more water than your thirst dictates. Water is an excellent fluid replacement drink.

Sports Drinks and Physical Activity

Special sports drinks are not necessary. There is little need to replace chemicals, such as sodium, lost during most brief exercise sessions since these small losses are typically replenished when the next meal is eaten.

Water and Weight Loss

For those trying to manage their weight, water has an additional value – it's calorie free. It is also necessary for the chemical reaction needed to burn fat.

Exercising In Hot Weather

Special caution should be used when exercising in hot weather. Heat stress is potentially the greatest environmental danger of exercise. Decrease both the intensity and the time of your workout. Carefully listen to your body. If you have been accustomed to a cooler environment, plan a period of gradual acclimation. Most healthy people require 10j to 14 days to adjust, with full acclimation taking about 30 days. Remember to drink plenty of water.

Air Quality and Exercise

If you live in an area where pollen or smog is a problem, monitor daily changes in air quality and adjust the time and intensity of your workout

High Altitude and Exercise

If you move from a lower to a higher altitude area, be aware that the air is thinner and your work capacity will be decreased. According to the American College of Sports Medicine, a sea level resident can expect about a five percent reduction in work capacity at 4,000 feet. And as your altitude increases, your capacity continues to decrease. Again, you will need to adjust the intensity and time of your workouts until your body adjusts.

Exercise and Safety Equipment

Wear appropriate protective gear for your recreational or sport activity such as shin guards for soccer, helmets for cycling, and wrist, knee and elbow pads, along with helmets, for roller blading. Choose high quality equipment that gives your good protection, and make sure that it fits properly.

If you choose a recreational physical activity that involves speed or risk of falling, such as cycling and roller blading, make sure your equipment fits you well, is properly maintained, and that you wear the appropriate safety equipment for that sport or activity, including helmet.

I.C.E. Treatment for Acute Exercise Injuries

If you have an acute injury, such as a sprained ankle or strained hamstring, use the I.C.E. routine (Ice, Compression, and Elevation) for treatment.

- **ICE:** Put an ice pack on the injury for no more than 20 minutes at least three times a day. You can also use an ice cup, but limit exposure to 10 minutes because of the direct contact between the ice and the skin. Move the ice around the injured site using circular motions. To make an ice cup, freeze water in a paper cup, then peel back the top half of the cup to expose the ice, leaving the bottom half as a place to hold the cup.
- **COMPRESSION:** Then use compression by applying pressure around the injured area using an elastic wrap to decrease the swelling.
- **ELEVATION:** The injured part should be elevated as much as possible in the first three days after the injury to reduce the effects of gravity on blood pooling in the extremities, which contributes to bruising, swelling, and stiffness.